

SMB-PT042
(PC 00 396 BUS)

CLAIMS

- ✓ 1. Membrane vacuum pump (101, 102, 103, 104 and 105) with an operating membrane (1) delimiting a conveying space (2), and a supplemental membrane (3) arranged on a side of the operating membrane (1) facing away from the conveying space (2), a membrane interspace (4) provided between operating membrane (1) and supplemental membrane (3) and a pump drive connected to the operating and the supplemental membranes (1, 3) for oscillating movement in the same direction, whereby the membrane interspace (4) is connected with at least one suction channel (7) in order to evacuate and assimilate a pressure condition in the membrane interspace on one side and the conveying space (2) on the other side, and whereby the working membrane (1) is stretched to the top and bottom dead center points of its oscillating movements.
- ✓ 13. Membrane vacuum pump (101, 103, 105) according to claim 1, wherein the membrane interspace (2) is pneumatically joined through the at least one suction channel (7) parallel to the conveying space (2) with the pump inlet (8).
- ✓ 14. Membrane vacuum pump (102, 104) according to claim 1, wherein the pump inlet (8) is pneumatically connected through the membrane interspace (4) and the suction channel (7) with the conveying space (2).

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15. Membrane vacuum pump (101) according to claim 14, wherein in the membrane interspace (4), at least one intake filter and/or noise damping element (9) is provided.
16. Membrane vacuum pump according to claim 15, wherein the intake filter and/or noise damping element (9) is made of an elastic material and is acted upon on one hand by operating membrane (1) and on the other by the supplemental membrane (3).
17. Membrane vacuum pump according to claim 15, wherein the intake filter and/or noise damping element generally fills the membrane interspace (4).
18. Membrane vacuum pump according to claim 15, wherein the intake filter and/or noise damping element (9) is configured as an open cell foam element arranged between the operating membrane (1) and the supplemental membrane (3).
- ✓ 19. Membrane vacuum pump (105) according to one of claim 1, wherein the operating membrane (1) includes an inherently stable membrane bracing (11) which is held on a connecting rod of the pump drive and which provides form-fitting support at least in a central region of the operating membrane (1) on a membrane reverse side.

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- ✓ 20. Membrane vacuum pump according to claim 1, wherein the membrane pump forms a first stage of a multistage pump or pumping facility.
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21. Membrane vacuum pump (103) according to claim 1, wherein the operating membrane (1) and the supplemental membrane (3) are joined with each other in one piece to form a double membrane (15).

22. Membrane vacuum pump (103) according to claim 21, wherein the operating membrane (1) and the supplemental membrane (3) are joined through a central spacer (11) with each other in one piece, and the spacer (11) has on a side facing away from the conveying space (2) an undercut fastening opening for insertion of a form-fitted fastening element (16) connected with a connecting rod of the pump drive.

- ✓ 23. Membrane vacuum pump according to claim 1, wherein the operating membrane (1) is configured as a molded membrane.